GSAS v4.3 Release Notes

GSAS Team

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Introduction

GSAS 4.3 contains significant improvements to the Waveform alternate fitting process, an improved energy calculation, Atmosphere improvements and numerous QAP tweaks. The major changes are summarized below:

For L1A, the following changes were made:

- Improved energy calculation.

For Waveforms, the following changes were made:

- Restructured the Waveform Manager.
- Improved energy/reflectance calculations.
- Saturation Index added
- Significantly improved waveform alternate fitting process. The changes make the process more compliant with the ATBD and significantly improve processing time. The changes are detailed in the next three bullets:
- Alternate fit uses the normalized waveform based on area before functional fit. (Standard fit uses raw voltage waveform).
- Alternate fit uses up to 5 largest peak plus peak nearest ground. The algorithm keeps all 6 peaks but amplitudes are allowed go to zero.
- Alternate fit least square exit criteria changed. Maximum iterations are now significantly less frequent. In fact, if maximum iteration flag is set , data should not be used (or used with caution).

For Elevation processes, the following changes were made:

- Restructured the Elevation Manager.
- Fixed synchronization problem caused by atmosphere data input.

For Atmosphere, the following changes were made:

- Added control file sanity checking.
- 532 cloud layer detection improved. Changes made result in the 40 Hz cloud search being executed for every shot, independent of the results of cloud searches at lower resolutions. Also the starting height for the cloud search is now 10 km, which means that clouds will now be reported when found up to the 10 km altitude (in prior versions, 4 km was the maximum). These changes mean that a cloud could be reported for one or more 40 Hz shots of a given second, while no cloud was reported at the 1 second or 5 Hz resolution

Other, more general fixes include:

- Updated ANC45 versionID and parameter names.
- General code cleanup.
- Improved product database descriptions.
- General QA/Browse fixes.

Product Format/Definition Change Summary

GLA01:

Changed the Algorithm variable type and name of i_GainShiftFlg in GLA01.

GLA-01, 02, 05-07, 12-15:

Changed the listings for GLA01,02,05-07,12-15 as a pass-thru for i_OrbFlg.

GLA05:

Changed the product units for i_RMSpulseWd in GLA05.

Changed variable i_spare6 and added new variable i_satNdx in GLA05.

GLA05-06, GLA12-15:

Made i_FrameQF a pass-thru for GLA05-06,GLA12-15.

GLA05-07, GLA02-15:

Changed description for i_beam_azimuth in GLA05-07, GLA2-15.

GLA06:

Changed description of i_MRC_af in GLA06 and created a new one byte flag PDF.

GLA06, GLA12-15:

Change to i_CorrStatFlg parameter in GLA06, GLA12-15, bits 4,5,6.

GLA07:

Changed product units in i5_ir_bscs, i40_ir_bscs, i_g_mbscs, & i_ir_mbscs in GLA07.

GLA13:

Changed algorithm units for d_SiRufMaxPk in GLA13.

Changed the description for the value=1 of bit 3, i_SiRufQf, GLA13.

GLA14:

D_Gamp and d_Gsigma now contain values

The latest product formats/descriptions will be available at http://glas.wff.nasa.gov/v43_products/.

Known Problems

A test in the received energy calculation based on the noise signal standard deviation is not being performed.

An investigation is needed for the alternate fit related to tuning parameters and always keeping 6 peaks.

40hz cloud heights based on 1064 channel in atmosphere processing are forthcoming.

SRTM DEM improvements are forthcoming.

Standard fit was found not to being performed as ATBD specifies, but was not changed.

Fit standard deviation for alternate is based on a normalized waveform, but for standard is based on raw waveform.

Significant product format changes (including record size changes) are forthcoming in the next major release of GSAS.

Release Information

The ClearCase label for this release is RELEASE_4.3.

The release date is May 12, 2005.

All internal version numbers have been updated to “V4.3 May 2005". This should be verified during operation by checking the version information in the appropriate ANC06 files.

SMDS Impact

The distribution tarfile is on glasdev.wff.nasa.gov at the following location:

```
/glasdev1/v4/dist/gsas_V4.3.tar.Z.
```

ANC Files

New versions of the ANC07 and ANC45 data files are required.

Bundle Changes

Sanity checking is now enforced in GLAS_Atm. This may impact partial processing if the planner specified more inputs/outputs than are actually required. If this occurs, sanity checking can be turned off by inserting an "OVERRIDE=TRUE" line in the control file.

QAP04 should be removed from the GLAS_L1A bundle. QAP04 is now producted by QAPG.

Compilation

All libraries and binaries should be recompiled using the top-level Makefile. **IMPORTANT: due to internal changes in the makefiles, SDMS MUST use the command "make runtime" to ensure the software is made without debug flags.**

The process for making the libraries and binaries is as follows **(NOTE: SDMS ONLY!!)**

```
cd /install_dir/gsas_v4.3
make runtime
make install
```

Note : developers should not use the above procedure. This procedure is for SDMS only!

Detailed Change Notes

0001972: Force energy computation for GSAS v4.3

Modified the global constants file in order to nullify a miscoded signal amplitude check in the received energy calculation..

0001970: Energy quality flags disconnected between products in database

Changed the listings for GLA02 and GLA07 as a pass-thru for i_g_TxNrg_qf and i_ir_TxNrg_qf.

0001967: Error while generating GLA04 browse products

Fixed bug that caused undefined variable.

0001966 : VersionID for GSAS 4.3

Updated the VersionID and Version Description for GSAS 4.3. GSAS 4.3 will correspond with Product Release 22.

0001962: QAP version number is wrong

The QA version number was updated to 4.5 for the metadata change to the QAP03 files.

0001959: Patch WF code for acctest

A temporary fix was added to the new waveform code in order to stop a floating point exception error. Mantis 1965 was opened to perform future investigations on the alternate fit always keeping 6 peaks.

0001953: i_OrbFlg disconnected among products in database

Changed the listings for GLA01,02,05-07,12-15 as a pass thru for i_OrbFlg. Left GLA08-11 as a separate listing. Also changed the Maximum Product value to 128 on GLA01,02,05-15.

0001950: GLA07 Product Units

Changed the product units for variables in GLA07: i5_ir_bscs, i40_ir_bscs, i_g_mbscs, & i_ir_mbscs to e11/(m-sr). NOTE: Last Modified date for the four variables was Aug 08, 2001.

0001945: Alternate Waveform Fit converge exit test and peak combine changes

Corrected error in LsqFit that was computing the goodness of fit for the wrong iteration. Implemented new convergence criteria for alternate fit.

0001930: IDL Portion of 0001922

Sample waveform reader code was develeloped and packaged as part of the SCF IDL readers.

0001927: Add IDL VM version of QA print utility

An IDL virtual machine procedure is now available to print the contents of a QA file to an ASCII file.

0001926: Update QABrowse and read s/w for changes to QAP03

New QAP Version = 4.5

The IDL read procedures were modified to handle the updated QAP03 summary record format.

The browse program was modified to add % missing GLA03 to the first browse image.

0001924: Add sanity check override flag to PGEs

Added sanity check override flag to StdCntl. Added check for this flag to GetControl subroutine of each PGE (glas_l0p, glas_l1a, glas_alt, glas_atm, glas_meta, glas_reader, glas_tick).

Flag is specified in the control with a line:

```
OVERRIDE=TRUE
```

The flag default is FALSE. No other value other than TRUE switches the flag on. If the flag is turned on, no sanity checking occurs and a WARNING error is written to the ANC06 indicating that no sanity checking of the control file was performed.

0001923: Bug in ErrorInit_mod.f90

Fixed a previously undetected overflow condition in ErrorInit_mod.

0001922: GLA01 waveform reader

Created two GLA01 waveform readers: one base on the SCF reader code, the other based on GSAS readers. The GSAS-based reader show how to merge GLA01 and GLA05 data. Both readers expand the waveforms and convert from counts to volts.

0001919: Need to change method used to get aux. info to the IDL code

QAPG no longer writes the along-track or summary parameter flags or scale factors to the header of the QAP file. The IDL readers now read this information from the data

structure file when available, or from the QAP headers (if available, as in the past) when it is not in the data structure file.

0001913: Elev mgr crashes on integration branch

Not an error. This was caused by an incorrected control file. However, a request will be added to implement code sanity checking for WF and ELEV processing.

0001910: WF QA does not write summary record in a specific case.

Fixed problem where QA summary packets were not being written when several QAP05 files were being written in one job.

0001905: WFMgr does not reinitialize QA start time for new granule

Moved dW_tEnd to top of module so it is accessable from GLA05_granule_init.

Put code in GLA05_granule_init to reinitialize dW_tEnd with the GLA05 time+QA_dump_tme upon start of a new granule.

0001904: Duplicated Code In WFMgr & L_EngCorr

Removed duplicate code in WFMgr and L_EngCorr..

0001903: WFMgr Calculating Energy With Wrong Instument State

Corrected error in WFMgr introduced on branch gcr0001853.

0001882: clarify description Bit 3 i_SiRufQF

Changed the description for the value=1 of bit 3, i_SiRufQF, GLA13.

New Description:

1=valid values do not exist for slope and roughness

0001878: i_FrameQF database entry for GLA06 vs. other products

i_FrameQF was made as a pass-thru for GLA05,06,12-15. GLA06 is no longer has its own entry.

0001876: units for i_RMSpulseWd wrong on V4.1 database for GLA05

Changed the product units for i_RMSpulseWd from 'ns' to '100 ns'.

0001874: V4.1 database wrong for d_SiRufMaxPk on GLA13

Changed algorithm units for d_SIRufMaxPk in GLA13 from 'cm' to 'meters'.

0001871: QAP04 difference between L1a and QAPG

QAP04 generation was removed from GLAS_L1A. QAP04 is now generated exclusively by QAPG.

0001863: GLA06 i_MRC_af description

A new one byte flag PDF has been created for i_MRC_af. The description has also been changed for i_MRC_af to reflect the new PDF flag.

0001862: i_beam_azimuth definition change

The description for i_beam_azimuth in GLA05-07,12-15 has been changed.

0001858: Add saturation index to GLA05

As a description of the saturation index., gla05%i_satNdx (40 per sec) is the count of the number of gates in a waveform which have an amplitude greater than or equal to i_satNdxTh (set in anc07_0004). i_satNdx has a minimum value of 0 and a maximum value of 255 (values greater than 255 are reset to 255 before being written to the product).

0001854: Update IDL code to work with changed GLA02 QAP files

QAP VERSION NUMBER = 4.3. This parameter has to be updated in the QABrowse control files at SDMS and SCF.

Added "Frames" to text on upper level plot for clarity.

Added image data to GLA02 browse products.

Eliminate use of Extract_FileName. Module can be dropped from the distribution.

Fixed problem with handling files with only 1 orbit of data (or less).

Fixed problem with handling old versions of GLA07-11 QA files.

Improved handling of images with a small data range.

0001853: GLAS_Alt manager cleanup

Significantly restructured the GLAS_Alt Manager code. This should make the code easier to understand and easier to maintain.

0001848: V4.1 product database incorrect

Made change to i_GainShiftFlg in GLA01_main. Changed the Alg Variable type to lrb and the Alg Variable Name to l_GainShiftFlg.

0001841: Bad QAP12 file

A temporary patch was installed in the IDL code that reads the QAP files to fill in constants that are missing from the elevation qap file summary records. A permanent fix is ready for installation but involves Fortran code, which will not make it into Release 19. Branch 1841.

0001836: IDL QA color table path problem

The FILE_WHICH routine allows the color table file to be located as long as it is in the IDL path. If it is not, the program throws an error.

The final (rightmost) lat/lon label on the plots was sometimes incorrect. This happened when the endpoint of the plot was significantly after the end of the data. This was fixed by forcing the plot to cover just the time period with data.

This fix:

- allows the program to locate the color table file without regard to the directory structure in which the files are stored. It IS necessary for the file to be in one of the directories that is in the IDL path.

- eliminates duplicate copies of images that were being written to the HDF file.

- corrects a problem with qap10 browse products that was putting each panel on a different plot.

- adds plot start and stop times to the QAP07 and 10 images.

0001830: GLA14%d_Gamp and GLA14%d_Gsigma Not Set

Not needed. GLA14%d_Gamp & GLA14%d_Gsigma are set in Pass_GLA05, which is called in ReadRecord.

0001822: Rel. 19 polar projection plots too large on browse products

A bug that caused mapped elevation data to be put on a polar projection rather than a cylindrical projection in some cases was fixed.

0001780: GLA06 and GLA05 metadata file does not have the same number of instrument states

Fixed problem in common_hdr_update which caused an additional Instrument State to be added to certain granules.

0001763: Replace estimated atm. trans. with actual in reflectivity calculation

Reflectivity corrected for atmospheric effects, as seen in products GLA06 and GLA12-->GLA15, is now derived using computed atmospheric parameters from product GLA11.

0001750: Laser xmit and received energy calcuation incorrect

The method for calculating the area used to calculate energy has been changed. A new correction term for the field of view has been added to the formula for the transmitted energy. The values of some of the constants used to calculate energy have changed.

0001708: Change to 40 Hz cloud layer height generation

The changes made to the code in this mantis affect the 40 Hz 532 channel cloud heights only. The product format does not change. Previous versions of the software also produced 40 Hz cloud heights from the 532 channel but the follwing differences have resulted from this mantis:

1) In prior versions of GSAS, the 40 Hz cloud search was only executed if there was a cloud found below 4 km at the 5 Hz resolution, which in turn was not executed unless there was a cloud found at the 1 second resolution.

2)Changes made under this mantis result in the 40 Hz cloud search being executed for every shot, independent of the results of cloud searches at lower resolutions. Also the starting height for the cloud search is now 10 km, which means that clouds will now be reported when found up to the 10 km altitude (in prior versions, 4 km was the maximum).

3) These changes mean that a cloud could be reported for one or more 40 Hz shots of a given second, while no cloud was reported at the 1 second or 5 Hz resolution.

0001616: GLAS_ATM options sanity checks

Implemented sanity checking for GLAS ATM.

0001414: Parameter name duplication in QAP02 and QAP06

The issue was determined to be an alternate platform compiler problem.

0001399: Version number for QAPRead

All processes that write QAP files were changed to add the QAP file version to the QAP header record.

0001389: QAP04 changes for metadata

L1a was updated to add GLA04 metadata parameters to the GLA04 QAP file.

The IDL code was updated to display this information on the browse images, and to use it to generate the metadata file.

QAP VERSION IS NOW 4.4. This has to be updated in the QABrowse files at SDMS and SCF.

0001388: QAP03 change for metadata

QAP03_mod.f90 was modified to add three summary variables to calculate the percent of 16 second records for which any of the following APID's are missing 19, 20, 21, 22, 23, 24, 25, 55. d_pctmiss_GLA03, i_exp_GLA03, i_numbad_GLA03 were the variables added to the QAP03_Sum_Out_TYPE structure.

The apid availability flag is counted for each apid, and if any are missing the QA_Sum%Sum_Out%i_numbad_GLA03 is incremented to count the missing apid.

0001387: QAP02 change for Metadata

QAP02 data has received supplemental APID counters. A few minor internal code problems in QAP07-QAP11 were repaired.

0000617: GLA13 QA problem regarding Sea Ice roughness

Inspecion of a current copy of a text-formatted printout of GLA13 QAP file and of a copy of the first page of the png graphics for that file showed that previous problems flagged in

Mantis 617, specifically regarding a lack of displayed values for two seaice roughness parameters, appear to have been rectified. Both the graphics output and the availability of numerical data used as inputs to those displays are now correct. This problem has been corrected by the largescale re-write of the ElevMg.

0000371: dry trope correction has blips

An error has been corrected which allowed inadvertent values to be recorded in the 06,12,13, and 15 GLAS elevation products for the range correction due to the dry troposphere (i_dtrop). The error appeared as a sporadic offset (also called a "blip") in the values from the expected dry trop values.

Changed files

./cc_util/f90.sh
./data/anc07_001_01_0001.dat
./data/anc45_001_01_0001.dat
./data/anc45_001_01_0002.dat
./data/anc45_001_01_0003.dat
./data/anc45_001_01_0004.dat
./data/anc45_001_01_0005.dat
./data/anc45_001_01_0006.dat
./data/anc45_001_01_0007.dat
./data/anc45_001_01_0008.dat
./data/anc45_001_01_0009.dat
./data/anc45_001_01_0010.dat
./data/anc45_001_01_0011.dat
./data/anc45_001_01_0012.dat
./data/anc45_001_01_0013.dat
./data/anc45_001_01_0014.dat
./data/anc45_001_01_0015.dat
./src/atm_lib/vers_atm_mod.f90
./src/common_libs/anc_lib/anc07_glob_mod.f90
./src/common_libs/anc_lib/vers_anc_mod.f90
./src/common_libs/cntrl_lib/strcompress.f90
./src/common_libs/cntrl_lib/vers_cntrl_mod.f90
./src/common_libs/err_lib/ErrorInit_mod.f90
./src/common_libs/err_lib/vers_err_mod.f90
./src/common_libs/exec_lib/ReadData_mod.f90
./src/common_libs/exec_lib/StdCntl_mod.f90
./src/common_libs/exec_lib/com_hdr_update_mod.f90
./src/common_libs/exec_lib/vers_exec_mod.f90
./src/common_libs/file_lib/vers_file_mod.f90
./src/common_libs/geo_lib
./src/common_libs/math_lib/vers_math_mod.f90
./src/common_libs/platform_lib/const_glob_mod.f90
./src/common_libs/platform_lib/vers_platform_mod.f90
./src/common_libs/prod_lib
./src/common_libs/prod_lib/vers_prod_mod.f90
./src/common_libs/time_lib/vers_time_mod.f90
./src/create_gla16/Create_GLA16.f90
./src/create_gla16/GetControl_mod.f90

./src/elev_lib/vers_elev_mod.f90
./src/glas_alt
./src/glas_apid/GLAS_APID.f90
./src/glas_apid/GetControl_mod.f90
./src/glas_atm/GLAS_Atm.f90
./src/glas_atm/GetControl_mod.f90
./src/glas_gps/GetControl_mod.f90
./src/glas_l0p/GLAS_L0proc.f90
./src/glas_l0p/GetControl_mod.f90
./src/glas_l0p/time_conversion_mod.f90
./src/glas_l1a/GLAS_L1A.f90
./src/glas_l1a/GetControl_mod.f90
./src/glas_l1a/L1A_QAP_mod.f90
./src/glas_meta/GLAS_Meta.f90
./src/glas_meta/GetControl_mod.f90
./src/glas_reader/GLAS_Reader.f90
./src/glas_reader/GetControl_mod.f90
./src/glas_reader/Makefile
./src/glas_reader/PrintAnc_mod.f90
./src/glas_reader/PrintQAP_mod.f90
./src/glas_tick/GLAS_Tick.f90
./src/glas_tick/GetControl_mod.f90
./src/glas_tick/ReadTickData_mod.f90
./src/l1a_lib/L_Alt_mod.f90
./src/l1a_lib/L_EngCorr_mod.f90
./src/l1a_lib/QAP03_mod.f90
./src/l1a_lib/vers_l1a_mod.f90
./src/prod_util/gsas_prod_readers
./src/prod_util/scantime/GetControl_mod.f90
./src/prod_util/scf_prod_readers
./src/prod_util/splitter/GetControl_mod.f90
./src/wf_lib/vers_wf_mod.f90
./data/anc07_001_01_0000.dat
./data/anc07_001_01_0001.dat
./data/anc07_001_01_0005.dat
./src/common_libs/geo_lib/Makefile
./src/common_libs/geo_lib/vers_geo_mod.f90
./src/common_libs/prod_lib/GLA01_Pass_mod.f90
./src/common_libs/prod_lib/GLA01_hdr_mod.f90
./src/common_libs/prod_lib/GLA01_wf_mod.f90
./src/common_libs/prod_lib/GLA05_print_mod.f90
./src/common_libs/prod_lib/Makefile
./src/common_libs/prod_lib/common_flags_mod.f90
./src/glas_alt/Elev_Granule_mod.f90
./src/glas_alt/Elev_QAP_mod.f90
./src/glas_alt/Elev_Support_mod.f90
./src/glas_alt/GLAS_Alt.f90
./src/glas_alt/GetControl_mod.f90
./src/glas_alt/Makefile
./src/glas_alt/WF_Granule_mod.f90
./src/glas_alt/WF_QAP_mod.f90
./src/glas_alt/WF_Support_mod.f90
./src/glas_alt/eCntl_mod.f90

./src/prod_util/gsas_prod_readers/wf_reader/Makefile
./src/prod_util/gsas_prod_readers/wf_reader/parm_reader.f90
./src/prod_util/gsas_prod_readers/wf_reader/wf_reader.f90
./src/prod_util/scf_prod_readers/Makefile.gsas
./src/prod_util/scf_prod_readers/Makefile_read_wf
./src/prod_util/scf_prod_readers/mscf_wf_reader_mod.f90
./src/prod_util/scf_prod_readers/read_gla01_wf.f90
./cc_util/config_specs/gsfc_v0
./data/anc07_001_01_0002.dat
./data/anc07_001_01_0003.dat
./data/anc07_001_01_0004.dat
./idl/qa_browse/browse/qab02_lowerlevelplots.pro
./idl/qa_browse/browse/qab02_writetabletoplot.pro
./idl/qa_browse/browse/qab03_summary.pro
./idl/qa_browse/browse/qab04.pro
./idl/qa_browse/browse/qab04_alongtrack.pro
./idl/qa_browse/browse/qab04_histograms.pro
./idl/qa_browse/browse/qab04_lpaandlrsimages.pro
./idl/qa_browse/browse/qab04_summary.pro
./idl/qa_browse/browse/qab_outputfilename.pro
./idl/qa_browse/browse/qab_product.pro
./idl/qa_browse/browse/qab_writeheadfoottoplot.pro
./idl/qa_browse/browse/qabatm_images.pro
./idl/qa_browse/browse/qabrowse.pro
./idl/qa_browse/compare
./idl/qa_browse/read/qapr_readfile.pro
./idl/qa_browse/read/qapr_readheader.pro
./idl/qa_browse/read/qapread.pro
./idl/qa_browse/util
./src/atmosphere/QA/QAP07_mod.f90
./src/atmosphere/QA/QAP08_mod.f90
./src/atmosphere/QA/QAP09_mod.f90
./src/atmosphere/QA/QAP10_mod.f90
./src/atmosphere/QA/QAP11_mod.f90
./src/atmosphere/layers/A_cld_grd_det_mod.f90
./src/atmosphere/layers/A_cld_lays_mod.f90
./src/common_libs/anc_lib/anc07_wf_mod.f90
./src/common_libs/exec_lib/C_CalcNrg_mod.f90
./src/common_libs/platform_lib/const_atm_mod.f90
./src/common_libs/platform_lib/const_wf_mod.f90
./src/common_libs/prod_lib/GLA05_Pass_mod.f90
./src/common_libs/prod_lib/GLA05_alg_mod.f90
./src/common_libs/prod_lib/GLA05_prod_mod.f90
./src/common_libs/prod_lib/GLA05_scal_mod.f90
./src/common_libs/prod_lib/GLA06_Pass_mod.f90
./src/common_libs/prod_lib/qap_version_mod.f90
./src/createGran_util/pop_granule_mod.f90
./src/elevations
./src/glas_alt/ElevMgr_mod.f90
./src/glas_alt/WFMgr_mod.f90
./src/glas_atm/AtmMgr_mod.f90
./src/l1a_lib/QAP02_mod.f90
./src/l1a_lib/qap04_mod.f90

./src/qapg
./src/waveforms/W_Assess/W_Assess_mod.f90
./src/waveforms/W_Common/W_LsqFit_mod.f90
./src/waveforms/W_CreQAStats/W_CreQAStats_mod.f90
./src/waveforms/W_FunctionalFt/W_FunctionalFt_mod.f90
./idl/qa_browse/compare/qapc_compareqvv.pro
./idl/qa_browse/compare/qapc_metadata.pro
./idl/qa_browse/compare/qapc_metadata02.pro
./idl/qa_browse/compare/qapc_metadata04.pro
./idl/qa_browse/compare/qapc_metadata05.pro
./idl/qa_browse/compare/qapcompare.pro
./idl/qa_browse/util/compareqap.pro
./idl/qa_browse/util/hdf2images.pro
./idl/qa_browse/util/hdf2png.pro
./idl/qa_browse/util/printqap.pro
./idl/qa_browse/util/qab_translatecomponentstatus.pro
./idl/qa_browse/util/qap01V2_datastruct.pro
./idl/qa_browse/util/qap02V3_datastruct.pro
./idl/qa_browse/util/qap03V2_datastruct.pro
./idl/qa_browse/util/qap03V3_datastruct.pro
./idl/qa_browse/util/qap04V2_datastruct.pro
./idl/qa_browse/util/qap04V3_datastruct.pro
./idl/qa_browse/util/qap05V2_datastruct.pro
./idl/qa_browse/util/qap06V5_datastruct.pro
./idl/qa_browse/util/qap07V3_datastruct.pro
./idl/qa_browse/util/qap08V2_datastruct.pro
./idl/qa_browse/util/qap09V2_datastruct.pro
./idl/qa_browse/util/qap10V2_datastruct.pro
./idl/qa_browse/util/qap11V2_datastruct.pro
./idl/qa_browse/util/qap13V5_datastruct.pro
./idl/qa_browse/util/qap15V5_datastruct.pro
./idl/qa_browse/util/qapprint.pro
./src/elevations/anc09_pad_mod.f90
./src/elevations/c_Reflect_Atm_Corr_mod.f90
./src/qapg/Makefile
./src/qapg/qapg_generate_mod.f90
./src/qapg/qapg_gla05_mod.f90
./src/qapg/qapg_readgla_mod.f90
./src/qapg/qapg_specialcases_mod.f90
./src/qapg/qapg_writeqap_mod.f90